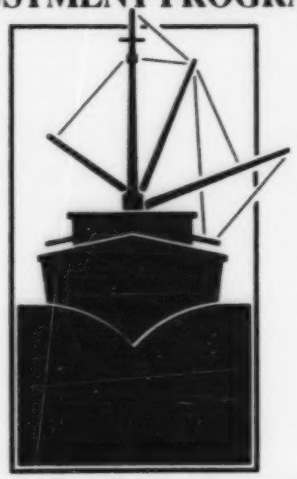
EXPLORATORY SCALLOP SURVEYS FORTUNE BAY and PLACENTIA BAY

ATLANTIC FISHERIES ADJUSTMENT PROGRAM



PROGRAMME D'ADAPTATION DES PÊCHES DE L'ATLANTIQUE

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Exploratory Scallop Surveys
Fortune Bay and Placentia Bay, Nfld. - 1990

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Summary

The purpose of this report is to present the results of two exploratory scallop surveys, one in Fortune Bay and one in Placentia Bay, conducted by the Department of Fisheries and Oceans, Fisheries Development Division between September 20 and November 2 of 1990. The report also examines the design of the scallop gear and draggers utilized by the surveys.

During the Placentia Bay survey the opportunity was taken to compare the performance of the Labrador scallop bucket with that of the Digby scallop bucket. Neither bucket caught substantially more scallop than the other. It was found that the Labrador bucket was better designed to fish a rough bottom, but was not as maintenance free as the Digby bucket.

The surveys found two scallop beds that may have commercial potential. The Fortune Bay survey discovered a bed in the Green Island area which produced as high as 670 iceland scallop per set. The Placentia Bay survey found an area in the Perch Rock vicinity that produced an average of 165 scallops per set. Both areas require further surveying to determine the extent of the scallop resource.

Other areas surveyed had insufficient quantities of scallop to be considered commercially viable. It is recommended that areas not surveyed due to the presence of fixed gear be surveyed at a later date when the gear is absent.

Acknowledgements.

Sincere appreciation is expressed to Mr. Roy Giles, owner and operator of the chartered vessel RICKY AND SISTERS, and to Mr. Jacques Perrot, owner and operator of the chartered vessel BEULA AND PATRICIA, and to the crews of these vessels.

Gratitude and appreciation is also expressed to Mr. Derrick Barrett, Fisheries and Oceans representative aboard the Placentia Bay survey vessel, and to Mr. Jim Hynes, Fisheries and Oceans representative aboard the Fortune Bay survey vessel, for their assistance and valuable suggestions.

Appreciation is also expressed to Mr Gerald Brothers, Project Officer, for his guidance and supervision in coordinating the surveys.

Forward.

During the past decade, the Fisheries Development Division, Newfoundland Region, has been conducting exploratory scallop surveys in an attempt to find new scallop stocks with commercial potential. As a result of these surveys commercial scallop fishing is taking place in various locations such as on the St. Pierre Bank.

Two kinds of scallop are found in Newfoundland waters, the Giant or Sea scallop (Placopecten Magellanicus) and the Iceland scallop (Chlanys Islandicus). Scallops contain a large white muscle called the "meat". The giant scallop are larger than the Iceland scallop and average between 15 and 20 "meats" per pound while the Iceland scallop average between 50-55 "meats" per pound. The "meat" is the only part of the scallop that has commercial value in Canada. In recent years scallops have made a substantial contribution to the commercial fishery in Newfoundland and Labrador.

This report covers two scallop surveys, one in Fortune Bay and one in Placentia Bay. Several scallop beds which may have commercial potential are identified.

1.0 Introduction

Fisheries Development Division, Fisheries and Habitat Management, Department of Fisheries and Oceans, Newfoundland Region, has recently conducted two exploratory scallop surveys; one in Fortune Bay and one in Placentia Bay. The purpose of the surveys was to determine the commercial distribution and abundance of scallop in both bays. The project was undertaken as a direct result of requests by fisherman for more detailed information on scallops in both bays. Any new scallop beds discovered through the surveys would enhance the scallop fishery in the region.

The Fortune Bay survey covered approximately 105 square nautical miles from Green Island to St. John's Head. Areas explored included Jerseyman Bank, around Brunet and Sagona Island's, and along the coast from Little Dantzic Cove to White Point. The survey area was broken down into 27 blocks which were grouped into 7 subareas (see survey map on page 22). The vessel chartered for this survey was the 38 ' scallop dragger "RICKY AND SISTERS" under skipper Roy Giles of Ramea. This survey commenced September 20, 1990 and was completed on October 23, 1990.

The Placentia Bay survey covered approximately 104 square nautical miles from Jean de Baie to Sound Island. Areas explored included Long Harbour, around Long Island, Merasheen Island, Bar Haven Island, Boat Harbour, Oderin Island, and Jude Island. The survey area was broken down into 34 blocks which were grouped into 6 subareas (see survey map on page 32). This survey also covered other areas suggested by fisherman during the course of the survey. The vessel chartered for this survey was the 44 ' scallop dragger "BEULA AND PATRICIA" under skipper Jacques Perrot of St. Lawerence. This survey commenced October 10, 1990 and was completed on November 2, 1990.

The chartered vessels on both surveys fished with Labrador buckets because of their

ability to fish on a moderately rough bottom. The Placentia Bay survey vessel also used digby buckets (traditional scallop gear used in Newfoundland) in order to compare their performance with the Labrador buckets.

This report presents the results of both surveys and identifies new beds of scallops discovered.

2.0 Survey Details

2.1 Fortune Bay Scallop Survey

This exploratory survey was carried out between latitude 46 degrees 52 minutes North (near Green Island), to latitude 47 degrees 26 minutes North (off St. John's Head). It covered approximately 105 square nautical miles from the coastline to 16 miles offshore. Fishing effort in this area was concentrated in depths ranging from 15-50 fathoms.

The survey area was divided into blocks covering between 3 square miles and 9 square miles each. The map on page 22 shows the locations of the blocks.

2.2 Placentia Bay Scallop Survey

This exploratory survey was carried out between latitude 47 degrees 11 minutes North (off John the Bay), to latitude 47 degrees 48 minutes North (off Sound Island). It covered approximately 104 square nautical miles from the coastline to 7 miles offshore. Fishing effort in this area was concentrated in depths ranging from 15 - 50 fathoms.

This survey area was divided into blocks covering between 2 and 7 square miles each. The map on page 32 shows the locations of the blocks.

2.3 Financial Analysis

Both surveys were funded by A.F.A.P. (Atlantic Fisheries Adjustment Program). The cost of the surveys can be itemized as follows:

Table 1: Survey Expenses

Item	Cost	Survey
Chartered Vessel	$ 17,437.71	Placentia Bay
Chartered Vessel	$ 18,242.57	Fortune Bay
Project Monitor	$ 8,050.12	Fortune Bay
Project Monitor	$ 5,000.00	Placentia Bay
Scallop Buckets	$ 8464.00	Both Surveys
Miscellaneous	$ 440.23	Both Surveys
Total	$ 57,634.63	Both Surveys

The cost of the chartered vessel on both surveys included the salary of the skipper and crew and the cost of fuel for the boat. The project monitors were paid according to contract. The scallop buckets were fabricated by Inshore Midshore Ltd. and included 2 sets of Labrador buckets as shown in figure 2 on page 13. The total cost for both surveys was $ 57,634.63.

3.0 Exploratory Vessel and Equipment.

To carry out these surveys two vessels were chartered for 20 sea days. Each vessel was crewed by 4 men, including the skipper, and a Fisheries and Oceans Representative. The charter contract required 6 or more hours fishing to justify a charter day. Each vessel completed 20 sea days between September 20, 1990 and November 2, 1990.

3.1 Fortune Bay Survey Vessel

This survey was carried out by the scallop dragger RICKY AND SISTERS. Prior to the survey the vessel was fishing for scallop on the St. Pierre Bank.

The RICKY AND SISTERS is 38 ' long, 10 1/2 ' across the stern, 16 ' in the quarter, and is constructed of wood. The vessel is powered by a 154 hp main engine and has accommodations for up to 5 people. It is equipped with an a-frame that is 18 ' high (deck to tip) and a dumping table that measures 13 ' X 4 '. The main winch (model # S-113-200) has a 10000 lb pull capacity (empty drum) and is rigged with 180 fathoms of 1/2 " steel cable. A 3 tonne capacity pullmaster (gearomatic) is located at the midpoint of the a-frame. The function of the pullmaster is to hoist the scallop gear from the ocean surface to the dumping table. The stern of the vessel is protected from impact with the scallop gear by green heart wood sheeting. The vessel has a 15 gallon hydraulic tank and a 25 gallon hydraulic pump. The fish hold has a capacity of 12000 lbs of shelled scallop. The vessel has the following electronic equipment:

1. Loran C,
2. VHF Radio,
3. Radar,
4. Depth Sounder,
5. Ship to Shore Radio,

6. CB Radio.

The profile and deck layout of a typical 35' to 45' vessel, rigged for scallop fishing, is shown in Figure 1 on page 10.

3.2 Placentia Bay Survey Vessel

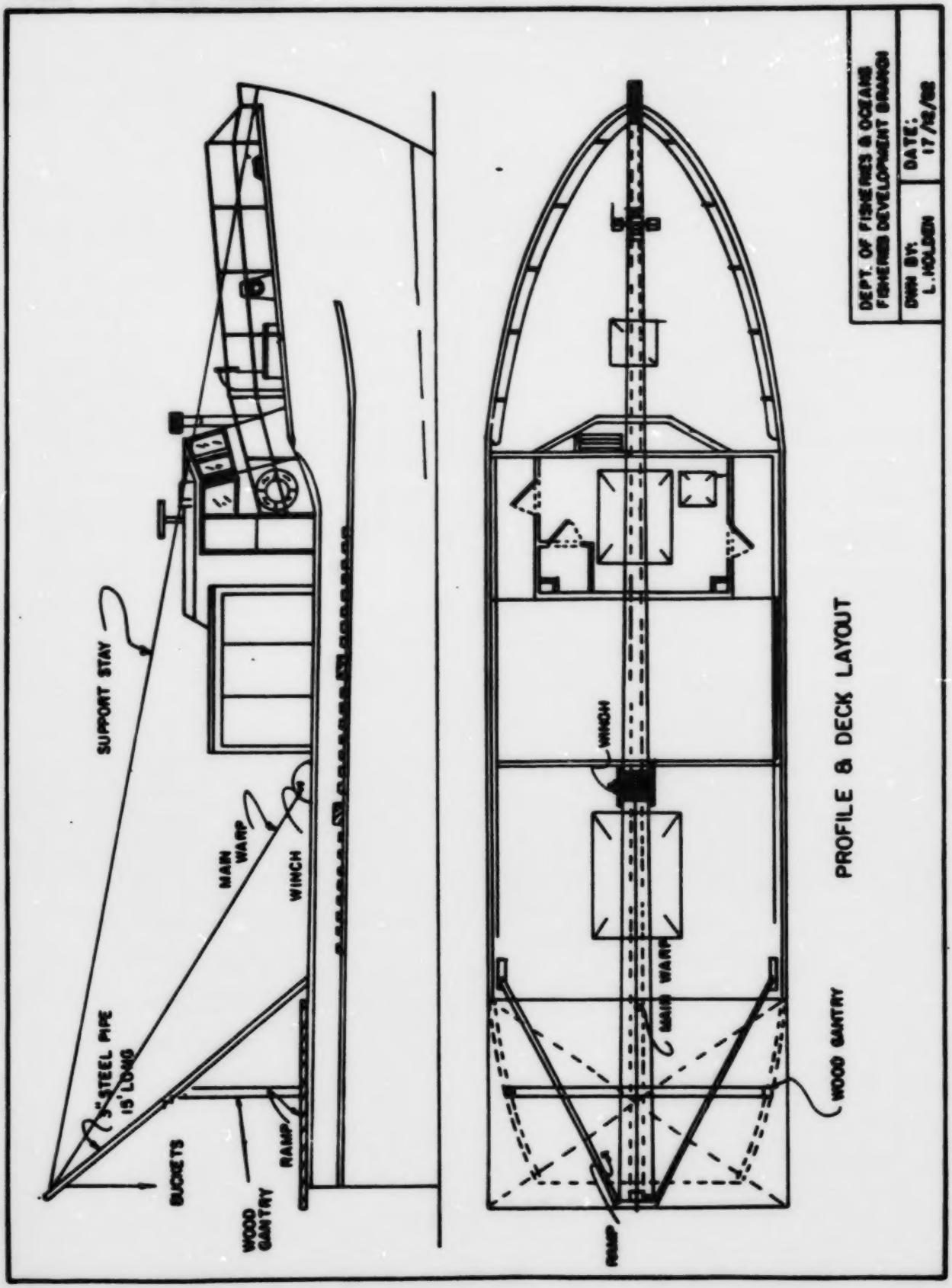
To conduct this survey , the wooden vessel, BEULA AND PATRICIA was chartered. Prior to the survey the vessel was fishing for scallop on the St. Pierre Bank.

The BEULA AND PATRICIA is 44 ' long, 12 ' in the stern, and is constructed of wood. The vessel is powered by a 165 hp volvo main engine and has accommodations for up to 5 people. It is equipped with an a-frame that is 22 ' high (deck to tip) and a dumping table that measures 13 1/2 ' X 5 '. The main winch (model # S-113-200) has a 10000 lb pull capacity (empty drum) and is rigged with 175 fathoms of 1/2 " diameter steel cable. A 4 tonne capacity pullmaster (gearomatic) is located at the midpoint of the a-frame. The stern of the vessel is protected from impact with the scallop gear by green heart wood sheeting. The hydraulic tank and pump have a capacity of 40 gallons each.. The fish hold has a capacity of 20000 lbs shelled scallop. The vessel has the following electronic equipment:

1. Loran C,
2. Plotter,
3. Radar,
4. Depth Sounder,
5. VHF Radio,
6. CB radio,
7. Ship to Shore Radio.

Good lighting is also present for night fishing.

FIGURE 1 TYPICAL VESSEL



4.0 Fishing Gear and Method of Operation.

The surveys made use of two types of scallop gear: (1) Labrador buckets, and (2) Digby buckets.

4.1 Labrador Buckets

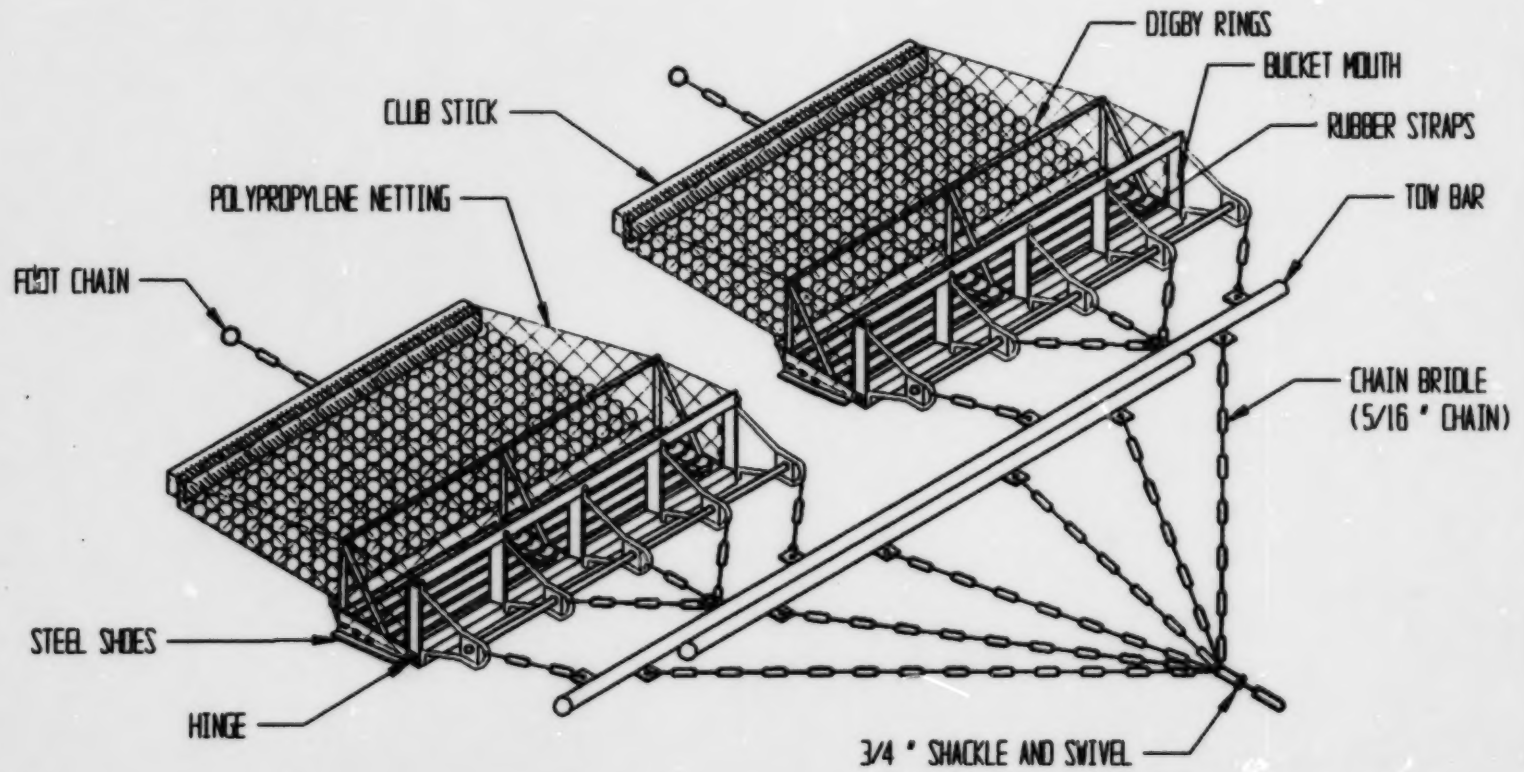
Labrador scallop buckets, typically used by the inshore scallop fishery in the Labrador Straits, were used for both surveys. The Labrador scallop bucket was developed by fisherman in the Strait of Belle Isle. An isometric of the rig used by the survey vessels is shown in figure 2. The bucket has a steel frame at the front which is 6 ' wide X 34.5 " long X 18 " high. All steel used in the frame is medium grade. A bag attached to the frame is made from 3 " diameter steel Digby rings (held together by 1 1/2 " rubber rings) on the bottom surface and 3 " diameter X 3 mm thick polypropylene netting on the top surface. The bag is 52 " wide X 15 1/2 " high in the front tapered to 4 " high in the rear. The front end of the bag is attached to the iron frame, via chain link and nylon rope, and the rear end of the bag is attached, with fence staples, to a club stick. The club stick is made of birch and is 72 " wide X 4 " high X 4 " long. The bucket is attached to the main warp via a tow bar and chain bridle.

Vessels on both surveys used a scallop rig consisting of two Labrador buckets, chain bridle, and tow bar. The buckets were connected to the tow bar via 5/16 " chain and 1/2 " shackles. Six lengths of 5/16 " chain (chain bridle) extended from the tow bar and connected to a 3/4 " shackle and swivel. The main warp was also connected to the 3/4 " shackle and swivel. 175 fathoms of 1/2 " steel cable was used to tow the buckets. Each scallop bucket weighed 397.5 lbs and the chain bridle and tow bar weighed 574.5 lbs. The total weight of the scallop rig was 1369.5 lbs.

The design of this bucket enables it to fish a relatively rough bottom. The bucket frame can swivel about a hinge located at the bottom of the mouth of the bucket thus enabling it to follow the contour of the ocean bottom. The bottom of each bucket is equipped with three equally spaced steel shoes, constructed of leaf spring steel from a pick up truck. These shoes enable the bucket to slide more smoothly while dragging and can prevent hook - ups. Between each set of steel shoes are 5 rubber straps. The rubber in the straps was cut in strips from the inner tube of a truck or a front end loader tire. The purpose of the rubber straps is to permit heavy debris, such as large rocks, to fall out of the bucket and to enable scallops to bounce back into the bag. The Labrador bucket is also equipped with a safety chain , connecting the mouth of the bucket to the cutting bar. The function of the safety chain is to prevent loss of the buckets bag and shoes if the hinge connection between the mouth of the bucket and the shoes breaks.

Although the Labrador buckets are designed to fish a rough bottom, problems arose with their maintenance. Rubber straps on the bottom of the frame would slip off or break on very a rough bottom. A clubstick was broken on rough bottom, indicating the need for a shock absorbent shield on the clubsticks. Skippers on both vessels indicated that the excess weight of the buckets could make them hard to retrieve if they were filled to capacity.

LABRADOR SCALLOP BUCKETS



FISHERIES & OCEANS FISHERIES DEVELOPMENT DIVISION NEWFOUNDLAND REGION	DRAWING TITLE: ISOMETRIC OF LABRADOR BUCKETS.	DRAWN BY: JACK SHEPPARD DATE : DEC. 4, 1990 SCALE : N.A. PLAN NO.:

FIGURE 2 LABRADOR BUCKETS

4.2 Digby buckets

Digby buckets are the type of scallop gear traditionally used in waters off the coast of Newfoundland. During part of the Placentia Bay survey the "BEULA AND PATRICIA" used a scallop rig consisting of six standard Digby buckets, 12 foot tow bar, and a chain bridle. Figure 4 shows a similar scallop rig having only 3 digby buckets. A "club stick" attached to each of the six buckets made it possible to dump all buckets at the same time. Each bucket has a steel frame at the front which is 10 " high and 24 " wide (see figure 3). The frame on this bucket is also constructed of medium grade steel. A bag attached to the iron frame is constructed of 2 1/2 " diameter iron rings held together by double 1 1/2 " diameter rubber rings. The bag is 36 " long and is tapered at the rear end. Each bucket weighed approximately 70 lbs. The total weight of the rig was approximately 1100 lbs.

The design of the Digby bucket enables it to fish regardless of its orientation on the bottom. A Digby bucket can fish with the 10 " side of its mouth riding the bottom or with the 24 " side of its mouth riding the bottom. A Labrador bucket is unable to do this because only the bottom portion of its bag is constructed of steel Digby rings, the top portion is constructed of polypropylene netting which would tear if it rode the bottom.

The design of the Digby buckets is very simple and practical. They do not have a problem with excess weight or wear. Their performance on the survey did not indicate any obvious faults with their design.

4.3 Gear Comparison.

At the start of the Placentia Bay Survey the opportunity was taken to compare the Labrador scallop bucket with the traditional Digby scallop bucket. Two 6 ' Labrador buckets were tested against six 2 ' Digby buckets. Each set of buckets was given 9 tows in blocks 15 and 16 of subarea 3 (see Long Island area on the map on page 32). The Labrador buckets

landed 103 scallops while the Digby Buckets landed 91. However, the small number of test tows and similar numbers of scallops landed make it impossible to reach any conclusions.

With respect to towing, the Labrador buckets performed better on a rough bottom. The Labrador buckets had less hookups than the Digby buckets.

FIGURE 3 DIGBY SCALLOP BUCKET

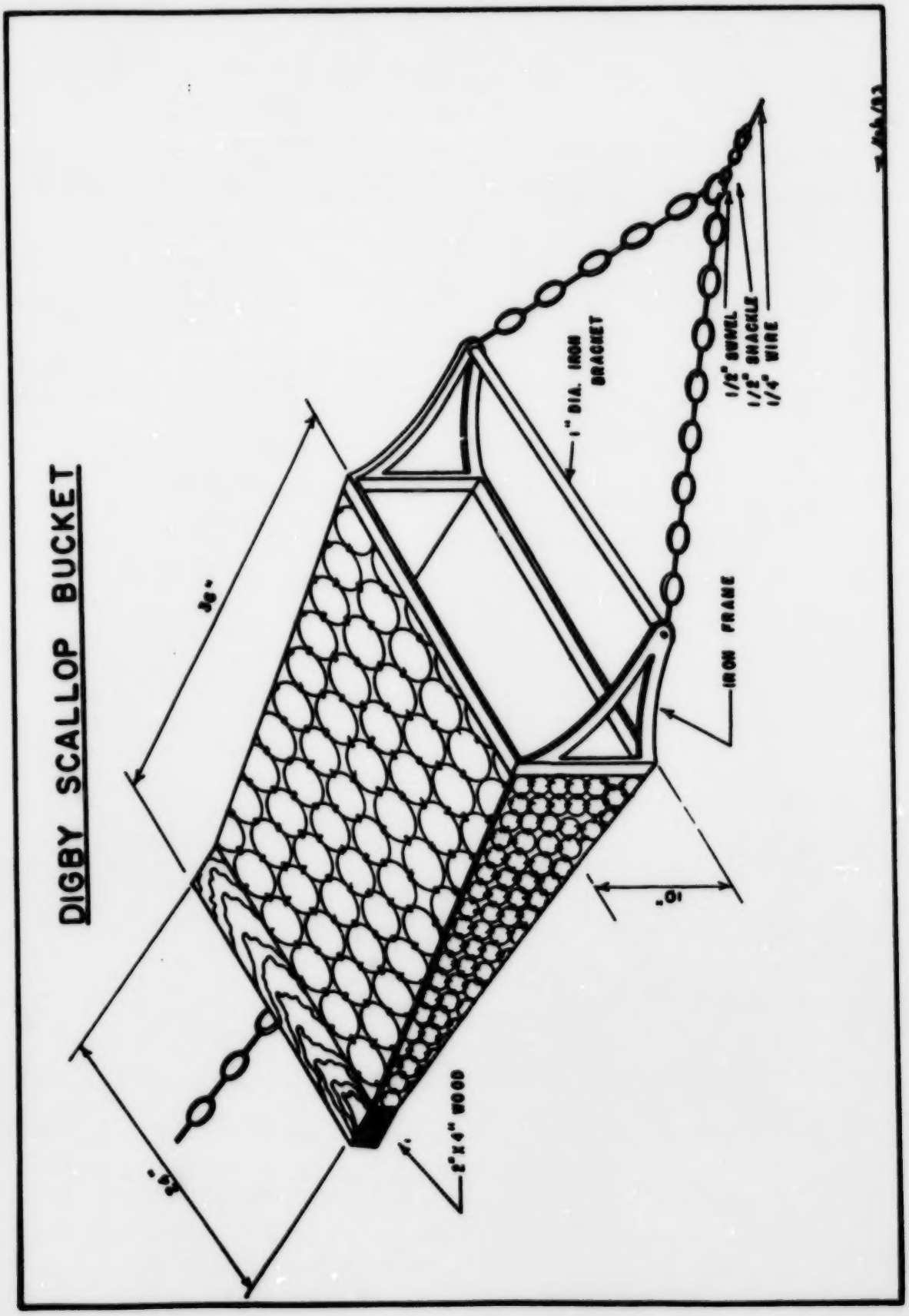
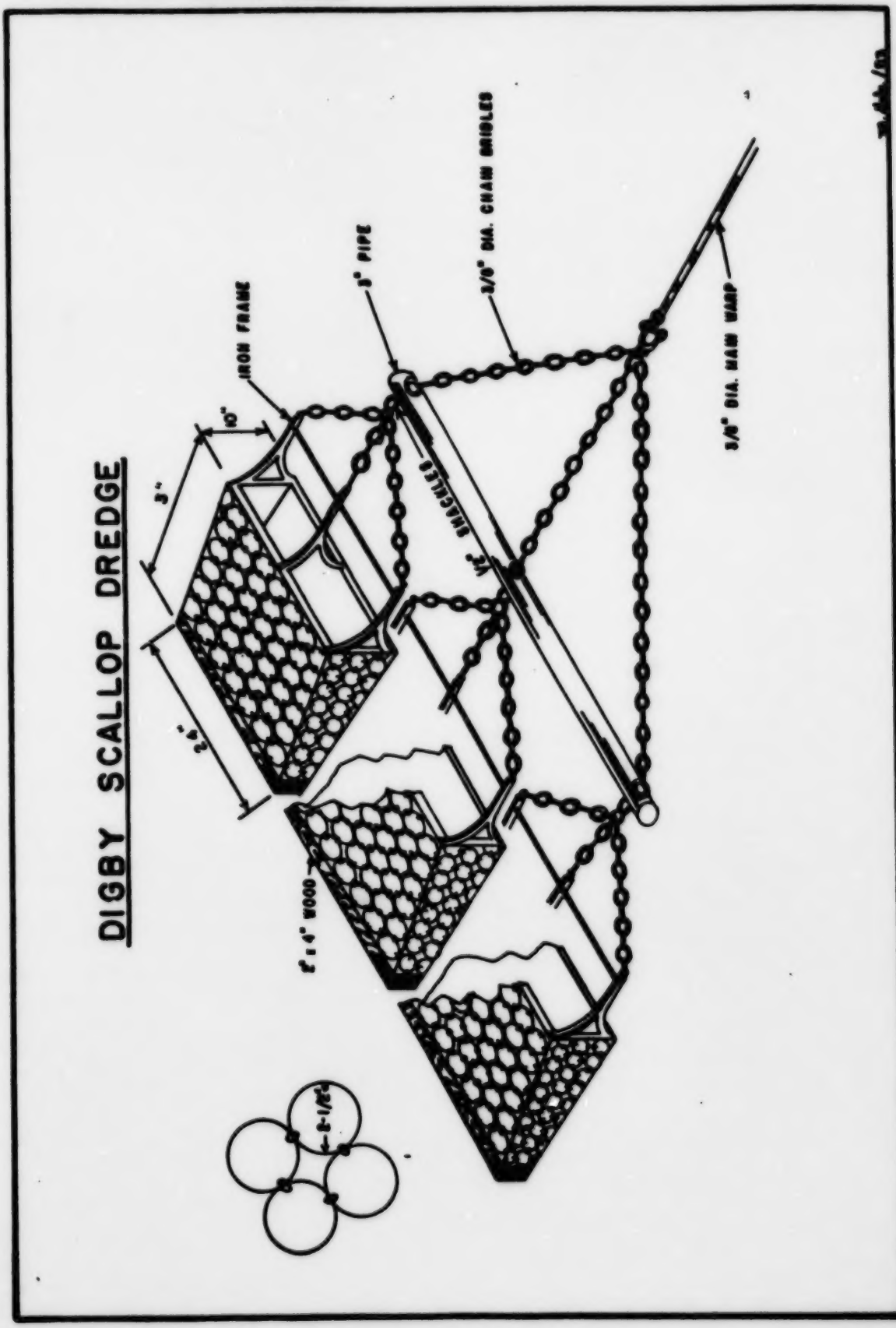


FIGURE 4 DIGBY SCALLOP DREDGE



4.4 Setting and Hauling

Once suitable depth and bottom was located by the depth sounder, setting was initiated. The pullmaster (hoisting winch on the a-frame) was engaged to lift the scallop gear over the stern and into the water. Once the gear was in the water the strain was taken by the main warp (1/2 " center greased cable). When the boat was headed in the direction of the set, the winch brake was gently released and the weight of the rig plus the forward motion of the vessel pulled the warp from the drum thus lowering the rig to the bottom. The amount of warp followed the 3:1 ratio (length of cable equals 3 times the depth to the bottom) except where bottom conditions required a different ratio.

As the vessel moved forward the practise was to maintain the same depth and follow the edge. Towing speeds varied according to bottom conditions and water depths, but generally ranged from 2 1/2 to 3 knots. It was attempted to carry out 15-20 minute tows but in many cases the gear was retrieved due to hookups in the seabed.

After completion of a tow the main winch was put in gear and the rig was pulled to the surface. When the chain bridle was positioned on the roller on the ramp, the cable from the pullmaster was hooked onto the chain bridle. The scallop rig was then hoisted onto the ramp. Finally, the clubsticks were hooked onto the pullmaster to dump the buckets.

4.5 Onboard Handling

Onboard handling commenced after the rig was set out again. The scallops were separated by hand from the dead shells, red kelp, seaweed, rock and other debris. The scallops were then put in plastic one bushel containers and the debris was dumped overboard. Scallops were shucked, washed, and placed in cheese cloth bags and iced until disposed of.

5.0 Results: Fortune Bay Scallop Survey

This exploratory scallop survey covered areas from Green Island to St. John's Head. The survey area (see map on page 22) consisted of 27 blocks grouped into 7 subareas:

1. blocks 1-2 (Jerseyman Bank),
2. blocks 3-12 (Brunet Island),
3. blocks 13-15 (Sagona Island to St. John's Head),
4. blocks 16-17 (White Point to Grand Beach),
5. blocks 18-20 (Grand Beach to Fortune),
6. blocks 21-23 (Fortune to Little Dantzic Cove),
7. blocks 24-27 (Green Island).

The results for each subarea are discussed separately. Numerical data for each subarea is contained in table 9. Data on sets in which more than 50 scallops were landed is contained in Appendix A. This survey did not use Digby buckets, all fishing was done with Labrador buckets. Most of the scallop landed by this survey were Iceland scallops.

5.1 Subarea 1: Jerseyman Bank

This subarea is located on the Jerseyman Bank and covered approximately 12 square nautical miles. The subarea was surveyed between September 25, 1990 and September 26, 1990.

Bottom conditions in this subarea were rough which resulted in damage to the scallop buckets (ie. loss of straps). The water depth ranged from 22 to 47 fathoms.

23 sets were performed in this subarea with a total of 2668 scallop being caught.

Table 2: Summary of Results - Subarea 1

Date	No. of Sets	Depth Range (fms)	Fishing Time (mins)	No. of Scallops Caught (Iceland)	Avg. # per Set	Block #
Sept. 25	6	33-45	93	848	141	1
Sept. 25	5	38-42	83	864	173	2
Sept. 26	4	35-43	66	20	5	1
Sept. 26	8	22-47	123	936	117	2
Total	23	22-47	365	2668	116	

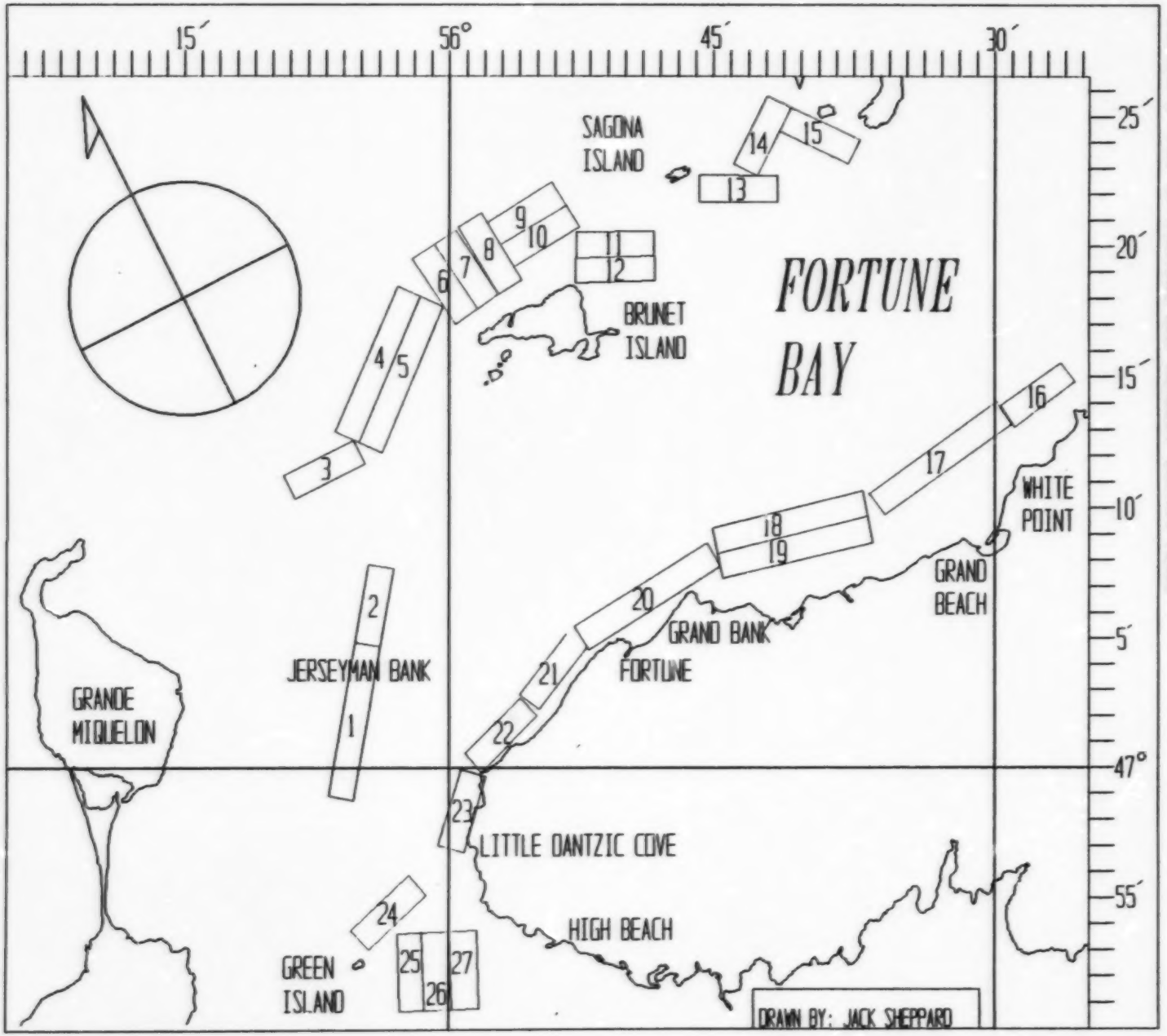


FIGURE 5 MAP OF FORTUNE BAY SCALLOP SURVEY AREA

5.2 Subarea 2: Brunet Island

This subarea covers the northern side of Brunet Island and has an area of approximately 36 square nautical miles. The exploration of this subarea occurred on September 30, 1990 and on October 3,October 9, and October 13,1990.

The bottom conditions in this subarea were very rough and very few scallop were found.

Table 3: Summary of Results - Subarea 2

Date	No. of Sets	Depth Range (fms)	Fishing Time (min)	No. of Scallops Caught (Iceland)	Avg. # per Set	Block #
Sept. 30	1	44-46	15			3
Sept. 30	9	37-60	127	7		4
Sept. 30	3	40-48	46			5
Oct. 3	6	31-56	77	184	31	6
Oct. 3	5	30-45	650	22	4	7
Oct. 3	1	41-42	15			8
Oct. 9	3	41-51	48			7
Oct. 9	4	25-51	51	2		8
Oct. 9	2	15-26	4			9
Oct. 9	3	20-45	26	1		10
Oct. 13	6	28-53	72			11
Oct. 13	6	20-44	58	3		12
Total	49	15-60	604	219	4	

5.3 Subarea 3: Sagona Island to St. John's Head

This subarea extends from Sagona Island to St. John's Head. It has an area of approximately 9 square nautical miles. The subarea was surveyed on September 10, October 2, and October 10,1990.

The bottom in this subarea was irregular and very rough. Several sets lasted only a few minutes because the bucket became hooked up on the bottom after a brief period of dragging. Gillnets also prevented fishing in some locations.

A total of 20 sets were made in this subarea with only 3 scallop being landed.

Table 4: Summary of Results - Subarea 3

Date	No. of Sets	Depth Range (fms)	Fishing Time (mins)	No. of Scallops Caught (Iceland)	Avg. # per Set	Block #
Sept. 24	3	30-49	43			13
Sept. 24	4	36-51	64			15
Oct. 2	3	30-59	22			13
Oct. 2	5	27-59	77	3		14
Oct. 10	5	30-50	60			15
Total	20	27-59	266	3		

5.4 Subarea 4: White Point to Grand Beach

This subarea extends from White Point to Grand Beach. It covers an area of 9 square nautical miles and was surveyed between October 15, 1990 and October 18, 1990.

The bottom conditions in this subarea were mossy and rough. The water depth

ranged from 32 to 48 fathoms.

The survey performed 18 sets in this subarea with only 6 scallop being landed.

Table 5: Summary of Results - Subarea 4

Date	No. of Sets	Depth Range (fms)	Fishing Time (mins)	No. of Scallops Caught (Iceland)	Avg. # per Set	Block #
Oct. 15	3	35-42	43			16
Oct. 18	3	41-48	51			16
Oct. 18	12	32-48	187	6		17
Total	18	32-48	281	6		

5.5 Subarea 5: Grand Beach to Fortune

This subarea extends along the coast from Grand Beach to Fortune and covered approximately 18 square nautical miles. Surveying took place between October 11, 1990 and October 12, 1990.

The bottom in this subarea was mossy, rocky, and very rough. Gillnets prevented fishing in block 18.

A total of 20 sets were made in this subarea with only 6 scallop being caught.

Table 6: Summary of Results - Subarea 5

Date	No. of Sets	Depth Range (fms)	Fishing Time (mins)	No. of Scallops Caught (Iceland)	Avg. # per Set	Block #
Oct. 11	1	36-53	15			18
Oct. 11	6	20-44	76	2		19
Oct .12	1	40-42	15	120	120	20
Oct. 15	7	35-42	105	2		20
Oct. 18	1	29-45	10			18
Oct. 18	3	33-43	45			20
Total	19	20-53	256	124	7	

5.6 Subarea 6: Fortune to Little Dantzic Cove

This subarea stretches along the coast from Fortune to Little Dantzic Cove. It covers an area of approximately 9 square nautical miles and was surveyed on September 20, September 29, October 1, and October 23, 1990.

Although bottom conditions were rocky and mossy some scallops were taken in blocks 21 and 22. A total of 1784 scallops were taken in 22 sets.

Table 7: Summary of Results - Subarea 6

Date	No. of Sets	Depth Range (fms)	Fishing Time (min)	No. of Scallops Caught (Iceland)	Avg. # per Set	Block #
Sept. 20	4	38-46	68	1436	359	21
Sept. 29	4	37-46	60	3		21
Sept. 29	2	37-44	21	4	2	22
Sept. 29	1	45-45	11			23
Oct. 1	2	41-45	32	83	42	21
Oct. 1	2	40-46	33	230	115	22
Oct. 1	2	39-48	35	3	2	23
Oct. 23	2	32-43	30	25	13	22
Oct. 23	3	36-46	45			23
Total	22	32-48	335	1784	81	

5.7 Subarea 7: Green Island

This subarea covers the area around Green Island. It was surveyed on September 27, September 28, September 29, and October 22, 1990. This subarea has an area of approximately 12 square nautical miles.

Although bottom conditions were rough in blocks 25, 26, and 27, there was a relatively smooth bottom in block 24. A total of 38 sets were made in this subarea with 5251 scallop being taken. The majority of the scallop were caught in block 24.

Table 8: Summary of Results - Subarea 7

Date	No. of Sets	Depth Range (fms)	Fishing Time (min)	No. of Scallops Caught (Iceland)	Avg. # per Set	Block #
Sept. 27	7	38-53	110	1890	270	24
Sept. 27	2	35-41	30	565	283	25
Sept. 27	3	32-48	40			26
Sept. 28	1	45-48	15	670	670	24
Sept. 28	6	29-50	90	97	16	26
Sept. 28	6	31-46	83	331	55	27
Sept. 29	2	44-49	37			25
Oct. 22	11	36-57	171	1698	154	24
Total	38	29-57	576	5251	138	

Table 9: Fortune Bay Scallop Survey Results

Date	No. of Sets	Depth Range (fms)	Fishing Time (min)	No. of Scallops Caught (Iceland)	Avg. # per set	Block # (Sub Area)
Sept. 25 and Sept. 26	23	22-47	365	2668	116	1-2 (1)
Sept. 30 and Oct. 3,9, and 13	49	15-60	604	219	4	3-12 (2)
Sept. 10 and Oct. 2, 10	20	27-59	266	3		13-15 (3)
Oct. 15 and Oct. 18	18	32-48	281	6		16-17 (4)
Oct. 11 and Oct. 12	19	20-53	256	124		18-20 (5)
Sept. 20, 29 and Oct. 1, 23	22	32-48	335	1784	81	21-23 (6)
Sept. 27, 28, 29 and Oct. 22	38	29-57	576	5251	138	24-27 (7)

6.0 Results: Placentia Bay Scallop Survey

This exploratory scallop survey covered areas from Jean de Baie to Sound Island. The survey area (see Map on page 32) consisted of 34 blocks grouped into 5 subareas:

1. blocks 1-5 (Big Shoal to Bar Haven Island),
2. blocks 6-11 (Northern Coast of Merasheen Island),
3. blocks 12-17 (Long Island),
4. blocks 18-22 (Long Harbour),
5. blocks 23-34 (Cape Rodger to Red Harbour).

In addition to the 34 blocks marked out by the survey 2 additional regions were surveyed:

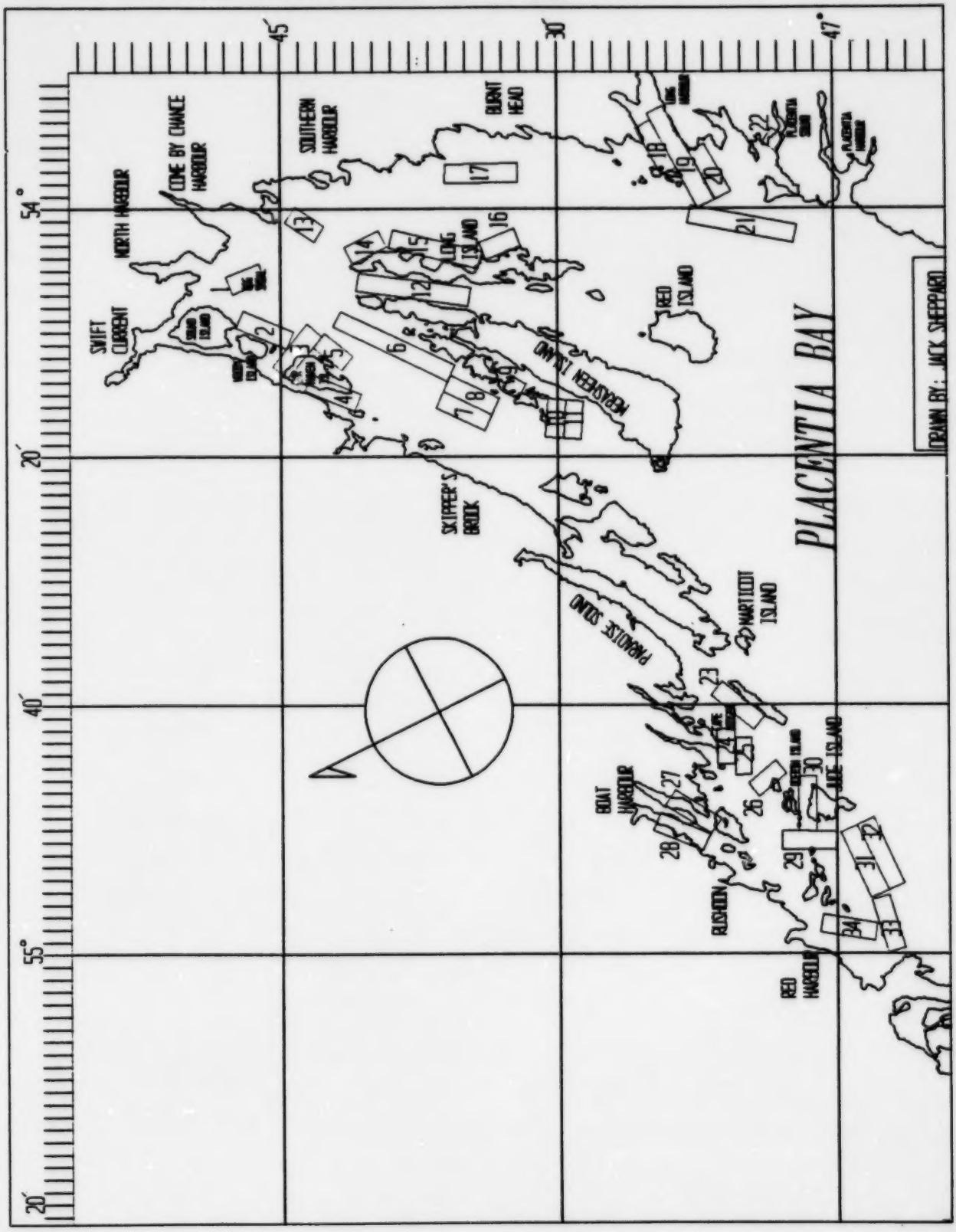
6. Spicer's Rock,
7. Perch Rock.

This survey used both Labrador buckets and Digby buckets. The areas fished with the Digby buckets were: (1) blocks 1, 3, 4, 11, 12, 14, 15, and 16, and (2) Spicer's Rock, Perch Rock, Jigging Cove, Gallows Harbour, Little Gallows Harbour, Cape Rodger Bay, and Non Such Inlet. The areas fished by the Labrador buckets were: (1) blocks 6, 15, 16, 19, 20, 21, 27, 28, and 30, and (2) Perch Rock, Spicer' s Rock, Flat Island, Broad Cove, and Rushoon. Any survey areas not mentioned were not fished due to either the presence of fixed gear or rough bottom conditions. During this survey the opportunity was taken to compare the performance of the Labrador gear with that of the Digby gear.

The results from each of the 5 subareas, along with the 2 extra subareas, are discussed separately. Numerical data for all 7 subareas is contained in table 18. Locations of sets in which greater than 50 scallop were landed are given in Appendix A. With the

exception of scallop landed in subarea 7 (Perch Rock), almost all scallop caught by this survey were sea scallops.

FIGURE 6 MAP OF PLACENTIA BAY SCALLOP SURVEY AREA



6.1 Subarea 1: Big Shoal to Bar Haven Island

This subarea stretches from Big Shoal to Bar Haven Island and includes Woody Island. It covers 13 square nautical miles and was surveyed between October 10, 1990 and October 11, 1990.

Bottom conditions in this subarea were rough and fixed gear also caused problems. The water depth ranged from 10 to 45 fathoms.

14 sets were made in this subarea with a total of 42 scallops being taken.

Table 10: Summary of Results - Subarea 1

Date	No. of Sets	Depth Range (fms)	Fishing Time (mins)	No. of Scallops (Sea)	Avg. # per Set	Block #
Oct. 10	1	33-33	18			1
Oct. 10	6	10-45	54	2		3
Oct. 11	3	22-38	26			3
Oct. 11	4	16-26	45	40	10	4
Total	14	10-45	143	42	3	

6.2 Subarea 2: Northern Coast of Merasheen Island

This subarea extends along the northern coast of Merasheen Island and covers approximately 18 square nautical miles. The surveying of this subarea took place on October 11, October 12, and October 14, 1990.

The bottom in this subarea was very rough. No sets could be made in blocks 7,8, and 10. In the 7 tows that were made only 40 scallops were landed.

Table 11: Summary of Results - Subarea 2

Date	No. of Sets	Depth Range (fms)	Fishing Time (min)	No. of Scallops Caught (Sea)	Avg. # per Set	Block #
Oct. 11	1	40-48	5	1	1	11
Oct. 11	1	12-12	2			9
Oct. 14	5	3-15	28	39	8	6
Total	7	3-48	35	40	6	

6.3 **Subarea 3: Long Island**

This subarea stretches along the south coast of Long Island and includes the region between Long Island and Merasheen Island. It covers approximately 19 square nautical miles and was surveyed on October 13, October 15, and October 16, 1990.

Bottom conditions in block 15 were smooth and good for towing. All other blocks in this subarea had rough bottoms and block 12 also contained some fixed gear.

A total of 32 sets were made in this subarea with 206 scallops being landed. The majority of these scallops were caught in block 15.

Table 12: Summary of Results - Subarea 3

Date	No. of Sets	Depth Range (fms)	Fishing Time (min)	No. of Scallops Caught (Sea)	Avg. # per Set	Block #
Oct. 12	8	8-50	57	7	1	12
Oct. 13	2	6-20	9	4	2	14
Oct. 13	12	2-21	68	85	7	15
Oct. 13	1	4-13	9	7	7	16
Oct. 15	7	4-15	66	101	14	15
Oct. 16	2	10-14	24	2	1	16
Total	32	2-50	233	206	6	

6.4 **Subarea 4: Long Harbour**

This subarea extends from Long Harbour to Placentia Sound and covers approximately 19 square nautical miles. The subarea was surveyed on October 16 and October 17, 1990.

This subarea had a very rough and rocky bottom. Block 20 contained alot of starfish and sea urchins, both of which prey on scallops.

19 sets were made in this subarea and only 1 scallop was landed.

Table 13: Summary of Results - Subarea 4

Date	No. of Sets	Depth Range (fms)	Fishing Time (min)	No. of Scallops Caught (Sea)	Avg. # per Set	Block #
Oct. 16	4	9-28	22			20
Oct. 16	4	33-43	55			21
Oct. 17	3	9-17	29	1		19
Total	19	7-43	164	1		

6.5 **Subarea 5: Cape Rodger to Red Harbour**

This large subarea covered the region between Cape Rodger and Red Harbour, including Oderin Island and Jude Island. It covers 35 square nautical miles and surveying took place from October 22 to October 28, 1990. Other areas in the vicinity of the subarea were also surveyed (see Table 15).

Bottom conditions in this subarea were very rough, with blocks 23 to 26 and blocks 31 to 34 having bottom conditions too rough to permit towing.

A total of 27 sets were made with 21 scallops being landed.

Table 14: Summary of Results - Subarea 5

Date	No. of Sets	Depth Range (fms)	Fishing Time (min)	No. of Scallops Caught (Sea)	Avg. # per Set	Block #
Oct. 23	5	7-49	35	3		23
Oct. 24	4	5-35	45			30
Oct. 25	12	5-27	80	15	1	27
Oct. 25	6	5-28	63	3		28
Total	27	5-49	223	21	1	

Table 15: Summary of Results - Miscellaneous Areas

Date	No. of Sets	Depth Range (fms)	Fishing Time (min)	No. of Scallops Caught (Sea)	Avg. # per Set	Location
Oct. 16	3	7-15	21			St. Croix Bay
Oct. 16	3	7-17	27	1		Bald Head Bay
Oct. 16	1	4-12	7			Moany Cove
Oct. 16	1	9-9	3			Clochan
Oct. 24	4	5-13	50	2		Flat Island
Oct. 24	4	7-14	48	1		Broad Cove
Oct. 24	1	10-17	13			Rushoon Harbour
Oct. 27	3	4-27	23	10	3	Gallows Harbour
Oct. 27	4	3-27	36	76	19	Little Gallows Harbour
Oct. 27	10	2-8	64	124	12	Cape Rodger Bay
Oct. 27	2	5-8	24	35	18	Non Such Inlet
Total	36	2-27	316	249	7	

6.6 **Subarea 6: Spicer's Rock**

This subarea is located outside the blocked off survey area. Spicer's Rock is located approximately 4 miles east of Jude Island (see map on page 22). This subarea was surveyed on October 26, 1990.

Bottom conditions in this subarea were rough and in the 5 sets made no scallops were found.

Table 16: Summary of Results - Spicer' s Rock

Date	No. of Sets	Depth Range (fms)	Fishing Time (min)	No. of Scallops Caught (Sea)	Avg. # per Set
Oct. 24	2	26-65	13		
Oct. 26	3	34-47	43		
Total	5	26-65	56		

6.7 **Subarea 7: Perch Rock**

This subarea is also located outside the survey area. Perch Rock is located approximately 3 miles off of St. Brides and was surveyed on October 18 and on October 20, 1990.

This subarea had ideal bottom conditions. The bottom was very smooth and permitted for long tows.

The Perch Rock subarea had excellent results. A total of 24 sets were made with 3951 iceland scallops being landed.

Table 17: Summary of Results - Perch Rock

Date	No. of Sets	Depth Range (fms)	Fishing Time (min)	No. of Scallops Caught (Iceland)	Avg. # per Set
Oct. 18	12	33-57	230	1163	97
Oct. 29	12	28-44	219	2788	232
Total	24	28-57	449	3951	165

Table 18: Placentia Bay Scallop Survey Results

Date	No. of Sets	Depth (fms)	Fishing Time (min)	No. of Scallops Caught	Avg. # per set	Block (Sub Area)
Oct. 10 and Oct. 11	14	10-45	143	42	3	1-5 (1)
Oct. 11, 12, and 14	7	3-48	35	40	6	6-11 (2)
Oct. 13, 15, and 16	32	2-50	233	206	6	12-17 (3)
Oct. 16 and Oct. 17	19	7-43	164	1		18-22 (4)
Oct. 22 to Oct. 28	27	5-49	223	21	1	23-34 (5)
Oct. 26	5	26-65	56			(6)
Oct. 18 and Oct. 29	24	28-57	449	3951	165	(7)

7.0 Conclusions

(1) The Perch Rock and Green Island (block 24) areas may contain scallop beds with commercial potential. No definite conclusion can be made about the size of the scallop resource due to limited information collected regarding the weight of the catch and the size of each individual scallop bed.

(2) No conclusion can be drawn about the performance (with regards to catching scallop) of the Labrador bucket versus that of the Digby bucket due to an insufficient number of comparison sets. The Labrador bucket does handle a rough bottom better than a Digby bucket, but requires more repair work due to its more complex design.

(3) The Labrador buckets would be better suited to the 35' to 45' class of vessel if they were lighter.

(4) The following areas on the Fortune Bay scallop survey showed no evidence of a commercial scallop resource: Brunet Island (blocks 3 - 12), Sagona Island to St. John's Head (blocks 13 - 15), White to Grand Beach (blocks 16 - 17), Grand Beach to Fortune (blocks 18 - 20). Some scallop were caught around Jerseyman Bank (blocks 1 and 2) and in the area from Fortune to Little Dantzic Cove (blocks 21 -23), with both areas producing an average of greater than 80 scallops per set.

(5) The following areas on the Placentia Bay scallop survey showed no evidence of a commercial scallop resource: Big Shoal to Bar Haven Island (blocks 1 - 5), Northern Coast of Merasheen Island (blocks 6-11), Long Island (blocks 12 - 17), Long Harbour (blocks 18 - 22), and Cape Rodger to Red Harbour (blocks 23 - 34).

8.0 Recommendations

(1) Further surveying should be conducted in the Perch Rock and Green Island areas to determine more accurately the size of the scallop resource.

(2) In future surveys more time should be spent determining the size of scallop beds.

(3) More detailed measurements should be made of catch characteristics such as lbs meat / bushel, and shell heights.

(4) Areas in which the presence of fixed gear prevented surveying should be surveyed at a later date when the gear is not present.

Labrador buckets have traditionally been used by fisherman in the Labrador Straits. The scallop surveys in Fortune Bay and Placentia Bay marked the first time the buckets were fished in either bay. Several design improvements can be made to the Labrador buckets to improve their performance in Fortune Bay and Placentia Bay:

(1) Another "clubstick", at the rear of the two buckets behind the two existing "clubsticks", would make it possible to dump both buckets at the same time. This would decrease the time between sets.

(2) The rubber straps on the bottom of the bucket frame could be replaced with thicker inner tube rubber and tied tighter to prevent breakage and slippage. The use of a closed chain link, instead of an open chain link, to tie the straps onto could also prevent slippage.

(3) The rubber straps could be replaced with chain. The chain would be stronger than the rubber and would still allow unwanted debris to fall through.

(4) The chains connecting the tow bar to the mouth of each bucket could be hooked up in straight segments, instead of at angles. This would provide for ease of assembly.

(5) The lifespan of the "clubstick" could be lengthened by covering it with rubber (strips or discs). The rubber would diminish wear by allowing the "clubstick" to slide more easily over the bottom. The rubber would also absorb some of the impact on a rough bottom.

(6) The weight of the buckets could be reduced through the use of a high strength grade of aluminum, instead of steel, for the frame construction. Aluminum also has the desirable properties of high strength and corrosion resistance.

Appendix A

High Catch Tables

Table 19: Location of Sets with Greater than 50 Scallop landed

Placentia Bay Scallop Survey.

Latitude	Longitude	No. of Scallops Caught (Iceland)	Set Direction	Set Duration
47 04 0	54 11 2	67	SW	15
46 54 5	54 18 5	443 (1.75 bushels)	SW	25
46 53 2	54 19 7	316 (1.25 bushels)	E	25
46 53 8	54 18 4	190 (0.75 bushels)	NE	20
46 59 9	54 14 4	68	SW	18
46 56 2	54 17 0	74	SW	16
46 55 1	54 17 7	440 (1.5 bushels)	SW	19
46 54 2	54 18 8	513 (1.75 bushels)	SW	22
46 53 2	54 19 6	513 (1.75 bushels)	SW	20
46 52 5	54 20 6	586 (2 bushels)	SW	22
46 51 6	54 21 1	73 (0.25 bushels)	SW	24
46 51 1	54 20 3	220 (0.75 bushels)	NE	19
46 52 5	54 19 3	220 (0.75 bushels)	NE	16

Table 20: Location of Sets with Greater than 50 Scallop landed Fortune Bay Scallop Survey.

Latitude	Longitude	No. of Scallops Caught (Iceland)	Set Direction	Set Duration
47 03 01	56 07 17	380	20	15
47 03 75	56 07 80	233	170	20
47 02 96	56 07 13	337	30	15
47 03 50	56 07 62	231	315	16
47 02 60	56 07 23	427 (1 bushel)	250	15
47 03 47	56 07 80	217	140	15
47 02 51	56 07 17	224	210	15
47 02 32	56 07 33	227	250	15
47 03 01	56 07 16	64	30	16
47 03 55	56 07 45	94	350	15
47 04 04	56 06 49	90	200	15
47 17 52	56 03 27	127	100	15
47 06 00	55 50 21	120	90	15
47 00 13	55 58 80	117	230	15
47 02 50	55 55 77	701 (1.5 bushels)	230	15
47 01 99	55 56 13	210 (0.5 bushels)	80	22
47 03 15	55 54 77	105(0.25 bushels)	60	15
47 01 67	55 57 32	166 (0.5 bushels)	190	15
46 53 23	56 02 60	241 (1 bushel)	280	15
46 53 52	56 03 20	999 (3 bushels)	220	18

Table 20: continued.

Latitude	Longitude	No. of Scallops Caught (Iceland)	Set Direction	Set Duration
46 53 44	56 04 18	620 (2 bushels)	130	15
46 50 59	56 02 85	495(1.75 bushels)	140	15
46 53 22	56 02 56	70	260	15
46 53 64	56 03 94	670 (2 bushels)	250	15
46 53 63	56 04 05	327 (1 bushel)	140	15
46 53 11	56 01 07	69	50	17
46 54 08	56 03 25	157	200	16
46 54 19	56 03 60	340	180	15
46 54 95	56 03 93	85	212	16
46 54 07	56 04 19	106	210	15
46 54 29	56 04 47	244	185	17
46 53 99	56 03 18	50	200	15
46 53 71	56 03 01	200	305	16
46 54 14	56 03 62	175	240	15
46 54 12	56 04 00	341	290	15